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Journal of the Less-Common Metals, Volume 37, (1974 June) page 21-34

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(54) Process for applying thermal barrier coatings to metals and resulting product

(57) Process for applying a protective coating to a metal substrate which provides a thermal barrier and a barrier against oxidation of the substrate. The coating material is a mixture of (1) zirconium and/or hafnium and (2) a metal such as nickel which does not form a stable oxide at a high temperature in an atmosphere having a very low concentration of oxygen. The coating is subjected to such conditions to produce an outer oxide layer of metal zirconium and/or hafnium and an inner metal layer of the second metal alloyed with one or more components of the substrate. The oxide layer provides thermal and oxidation protection and the inner layer bonds the coating to the substrate.

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